

What is claimed is:

1. An apparatus for controlling the flow of process material to a deposition chamber, comprising:  
an injector/vaporizer coupled to a deposition chamber, wherein the injector/vaporizer includes one or more grids positioned in a liquid material inlet passage that is connected to a vaporization chamber.
2. The apparatus of claim 1 wherein the one or more grids comprise a piezoelectric material.
3. The apparatus of claim 1 wherein the one or more grids each comprise at least one array of interlocking stripes attached to a frame.
4. The apparatus of claim 3 wherein each stripe of the at least one array of interlocking stripes are electrically coupled to each other via contacts formed on the frame.
5. The apparatus of claim 1 wherein two or more grids are positioned perpendicular to each other in the liquid material inlet passage.
6. The apparatus of claim 3 wherein the at least one array of interlocking stripes expand as a function of a voltage applied thereto.
7. The apparatus of claim 6 further comprising a controller coupled to the injector/vaporizer.
8. The apparatus of claim 7 wherein the controller causes the one or more grids to expand and contract according to a predetermined duty cycle.
9. An apparatus for controlling the flow of process material to a deposition chamber, comprising:

an injector/vaporizer coupled to a deposition chamber, wherein the injector/vaporizer includes one or more piezoelectric grids positioned in a liquid material inlet passage that is connected to a vaporization chamber, and wherein the one or more grids each comprise at least one array of interlocking stripes attached to a frame; and  
a controller coupled to the injector/vaporizer.

10. The apparatus of claim 9 wherein each stripe of the at least one array of interlocking stripes are electrically coupled to each other via contacts formed on the frame.

11. The apparatus of claim 9 wherein two or more grids are positioned perpendicular to each other in the liquid material inlet passage.

12. The apparatus of claim 10 wherein the at least one array of interlocking stripes expand as a function of a voltage applied thereto.

13. The apparatus of claim 9 wherein the controller causes the one or more grids to expand and contract according to a predetermined duty cycle.

14. A deposition system for depositing a material on a substrate, comprising:

a deposition chamber including a substrate support; and  
an injector/vaporizer coupled to a deposition chamber, wherein the injector/vaporizer includes one or more grids positioned in a liquid material inlet passage that is connected to a vaporization chamber.

15. The deposition system of claim 14 wherein the one or more grids comprise a piezoelectric material.

16. The deposition system of claim 14 wherein the one or more grids each comprise at least one array of interlocking stripes attached to a frame.

17. The deposition system of claim 16 wherein each stripe of the at least one array of interlocking stripes are electrically coupled to each other via contacts formed on the frame.

18. The deposition system of claim 14 wherein two or more grids a positioned perpendicular to each other in the liquid material inlet passage.

19. The deposition system of claim 16 wherein the at least one array of interlocking stripes expand as a function of a voltage applied thereto.

20. The deposition system of claim 19 further comprising a controller coupled to the injector/vaporizer.

21. The deposition system of claim 20 wherein the controller causes the one or more grids to expand and contract according to a predetermined duty cycle.

22. A deposition system for depositing a material on a substrate, comprising:

a deposition chamber including a substrate support;

an injector/vaporizer coupled to a deposition chamber, wherein the injector/vaporizer includes one or more piezoelectric grids positioned in a liquid material inlet passage that is connected to a vaporization chamber, and wherein the one or more grids each comprise at least one array of interlocking stripes attached to a frame; and

a controller coupled to the injector/vaporizer.

23. The deposition system of claim 22 wherein each stripe of the at least one array of interlocking stripes are electrically coupled to each other via contacts formed on the frame.

24. The deposition system of claim 22 wherein two or more grids a positioned perpendicular to each other in the liquid material inlet passage.

25. The deposition system of claim 23 wherein the at least one array of interlocking stripes expand as a function of a voltage applied thereto.

26. The deposition system of claim 22 wherein the controller causes the one or more grids to expand and contract according to a predetermined duty cycle.